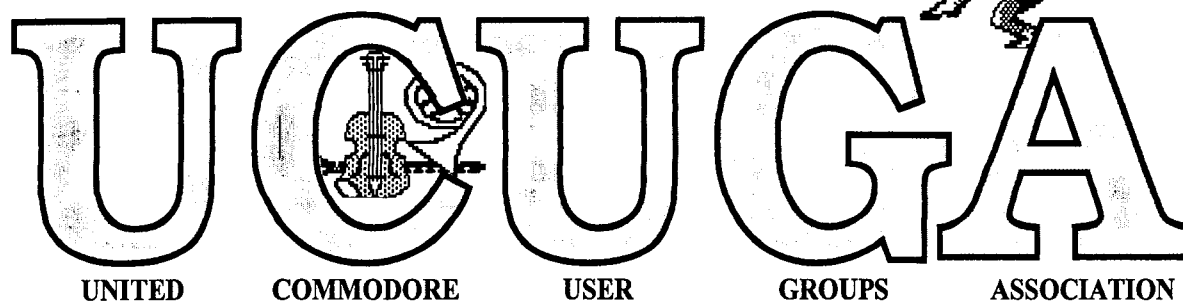


NOVEMBER

2002



Presents

## *The Commodore Digest*



# Imagine Your Commodore As a Music Machine...

## HOW?



*As Sherlock Holmes might say,*

## "Elementary, my dear Watson!"

*This issue not only gives you a few good tips on how to "play the keys," but Chris Fite also suggests a great way to clean and repair them. Check out his homemade "key-top puller" on page 4.*

## Publishing Editor's Remarks...

I am pleased to say that Rolf and I have decided to continue this publication for another year. Obviously, we both enjoy the opportunity to share this journal with Commodore friends. You make it rewarding by your encouragement and your patronage. Hopefully, this is a labor of love that will continue for many years. ;-)

If I have a concern, it is that my time seems to be stretched thinner and thinner. I find myself searching for ways to do more in less time. Clearly, I failed to accomplish that last month, as the issue was over a week late in the printing! It becomes a challenge to keep a look and feel of freshness while using previous issues as guides for future ones in order to save precious time.

The most important thing, of course, is to produce a digest that has something worth saying. I hope that you will help us in that effort by contributing your particular genius to our publication from time to time. This is the only way to provide a newsletter that truly reflects the very best within this computer community.

Meanwhile, thanks for your support. We hope to remain deserving of it for many years to come.

*by K. Dale Sidebottom*

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rolfmliller@aol.com



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**IT IS TIME TO RENEW  
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UCUGA hereby commits to providing 12 issues of the *Commodore Digest* for 2003. Thanks to thoughtful donations, User Group membership in UCUGA remains at \$25 per year (or \$35 overseas) and individual membership remains at \$15 per year (or \$25 overseas).

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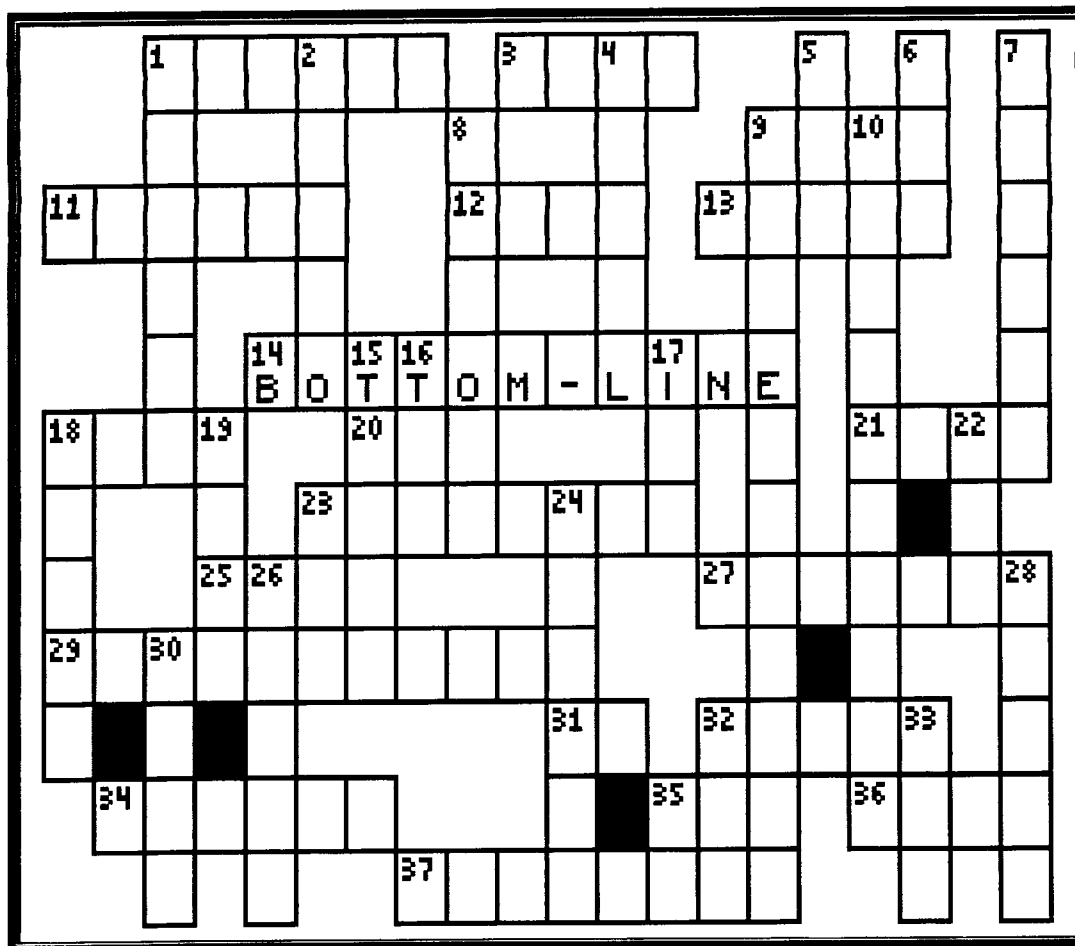
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--- ACROSS ---

**NOVEMBER CROSSWORD PUZZLE**

1. itemized register
3. ratio
9. earned
11. spending plan
12. orderly
13. medium of exchange
14. net
18. reign in
20. goal
21. 1/100th dollar
23. costs
25. finished
27. not spent
29. electronic ledger
31. toward
32. what's owed
34. stop working
35. personal ID no.
36. gain by work
37. acceding

---

**D**

**O**

**W**

**N**

---

1. diminish
2. opposite of income
4. the sum
5. container
6. unlock
7. point in time
8. opposite of outgo
9. making money
10. subtractive
15. a certainty of life
16. advice
17. tax collector

18. increase
19. rich source
22. hen peck
24. pay up
26. pleasant place
28. not saved
30. stink
32. storage place
33. unhappy
35. 16th Greek letter

(Solution on page 11)

## SOME KEYBOARD MAINTENANCE

*edited from material by Chris Fite*

A couple of years ago I completely cleaned the internal electrical contacts of my 128 keyboard. To do this, of course, requires taking the computer apart, then unscrewing a zillion little screws from the back of the keyboard. But it does not require removing the keytops. So, when I recently had to start pressing the "S" key several times to get it to work, I pried off its keytop. To my big surprise, underneath the key was a huge wad of matted hair and lint, plus bread crumbs.

This discovery explained to me how dirt gets into electrical contact area. Pressing the key causes the lint hugging the keystem to work its way downwards.

All of this debris was not visible until I removed the keytop. So I pried off some more tops and found the same thing, some keys having more lint than others. But this prying operation obviously stressed the plastic key parts, risking their breakage. So I devised a keytop puller tool.

### How To Make a Keytop-Puller

I wanted a device which would grab two opposing sides to allow balanced pulling straight up rather than from one side. I obtained some light duty aluminum sheet metal flashing and used heavy-duty scissors to cut a strip 6 inch long by 1/2 inch wide. I next sharply bent, at maybe 120 degrees, about a 1/2 inch portion of each end of the strip, which I then trimmed to about 1/32 inch. This forms two hooks which will slip under the keytop to pull it off. To complete the tool, I marked the exact center of the metal strip and bent it around a Magic Marker so that the two hooks lined up together facing each other.

The keys on the keyboard are too close together to just push the tool down over the keytop from above. Rather, the hooks must be slid sideways under the keytop. But when you pull the keytop off, watch out! There is a spring under each keytop. Yanking up too energetically will send that spring flying off somewhere. After cleaning out the lint, etc., the keytop simply pushes back on -- and don't forget the spring. (*Illustration...opposite page.*)

But I still needed to clean the electrical contact area under the "S" key, and I did not want to go to the trouble of disassembling the computer, let alone removing all those little screws. With the keytop off, I noticed four small pin-size holes that led downward into the area under the key. So I took about a foot of plastic fishing line and pushed several inches of it into the holes one at a time, then carefully pulled it out, hoping the procedure would, by chance, wipe the electrical contact area. IT WORKED!

I now keep that fish line coiled up in a box, along with the keytop puller tool, ready for use the next time I have a keyboard problem.

---C.F.---

## TROUBLE-SHOOTING THE PRINTER

If what the computer is used for involves printing, it goes without saying that a printer breakdown is as interruptive as a computer failure. But unlike computers, the fix is often easier. That is because most printer malfunctions are due to mechanical problems which are both detectable and repairable.

Printers tend to have difficulties on three levels. In the first stage, the printer still works but exhibits poor output such as light or uneven copy. In the second stage, the printer stops printing, but still shows signs of life. Stage three is complete failure...it seems absolutely dead.

First-stage printer problems can usually be cured with a little maintenance. It's assumed here that cleaning as recommended by the manufacturer is not the problem. And, of course, a new or reinked ribbon for dot-matrix and daisywheel printers, or a new ink cartridge for ink-jets, or toner for lasers, will often work wonders where 'light copy' is the symptom.

Otherwise, in the case of dot-matrix printers, try cleaning the print head. To eliminate gunk (a mixture of ink, dust, fibers) from around the pins, remove the print head and let the pin end soak in a little alcohol for a couple of hours. Then use a SOFT brush to get rid of any dirty stuff still clinging around the pin area.

The printwheels used on daisywheel printers are also subject to cleaning. The type face of the characters can become clogged with gunk. Lightly scrubbing with an old toothbrush dipped in alcohol is effective.

The nozzles on ink-jet printers may also need cleaning from time to time, but this is usually a built-in function of the printer -- see the manual. Laser printers don't have pins or nozzles, but besides toner, they utilize a photosensitive drum which needs replacing from time to time (some laser printers combine the toner and drum in one unit).

A printer which stops printing but still shows signs of life is often symptomatic of a bad connection. This assumes you replaced the ribbon after cleaning the print head, paper is present, and other user correctable error conditions have been remedied.

First check the connections between the computer and printer. Because electrical connections formed by friction occasionally become corroded, the mere action of unplugging and replugging cables will sometimes solve the problem. Also, if the printer is hooked to the disk drive, try connecting directly to the computer to eliminate the drive as the culprit. And if an interface is used, don't overlook it as the problem. Likewise, it is a good idea to try a different cable as they have been known to fail.

The other place to look for bad connections is within the printer itself. If the print head was cleaned, make sure the ribbon cable connecting it to the motherboard is properly seated. And most printers contain internal cabling. There are reports where removing the cover to examine these found the culprit to be a connection which worked itself loose.

Now, if the printer doesn't react at all when the switch is flipped, it might indeed be dead. However, actual hardware failures are relatively rare. So, before calling the coroner, check to make sure it is plugged into a live socket. And check the fuse. This too may be worth a look inside as many printers contain one or more internal fuses.

---R.L.M.---

## THE COMMODORE & THE BOTTOM LINE

Monetary gain can be viewed from two perspectives. First, of course, is the acquiring of money. The second is hanging onto it. After all, gains hardly hold where the outgo equals or exceeds income.

Outgo can be divided into three categories: 1) expenses to produce the gain, 2) taxes on the gain, 3) spending the gain. Regarding the latter, it is said that a penny saved is a penny earned. But the motivation behind most gain-producing activities revolves, in part, around the desire to spend. So, while saving could be classified as a form of moneymaking, the focus of this article is how the Commodore can be used to reduce expenses and taxes with the aim of improving the bottom line -- i.e. increasing the amount you have left to spend.

The first step toward reeling in expenses is to identify them. And here's a tip: the key is orderly records. In other words, this is not talking about just dumping all the receipts in a bin to be sorted at year's end when it's time to settle up with the I.R.S. (or government taxation office).

The goal in this identification process is to link each expense item with an activity. This linkage can produce surprising results. It is not uncommon to discover a duplicity of expenses which, with a little planning, can be eliminated as unnecessary.

A columnar ledger is the logical choice for this endeavor. With the activities heading the columns, each expense can be itemized by line and placed under its appropriate column. Spreadsheet programs are the obvious computer application for this since they are naturally formatted in columns and rows.

Expenses related to producing income, of course, have a direct relationship to taxes. Consequently, reducing expenses which are otherwise deductible conversely increases taxes. And because of this, some avoid expense reduction efforts. That's a mistake. Eliminating outgo at the cost of higher taxes is a profitable exchange. Here's why. Assuming a 25% tax rate, making a dollar will cost you 25 cents in taxes. Thus, a one dollar deduction will save you 25 cents in taxes. But you have to spend

that dollar in the first place. Therefore, eliminating a one dollar deductible expense in effect saves you 75 cents.

The other side of this is that every dollar of actual expense which is not accounted for costs you 25 cents in taxes that would not otherwise have to be paid. In effect, then, not recording a one dollar expense is the same as spending \$1.25. And before discounting this amount, contemplate throwing a quarter in the trash every time you spend a deductible dollar. It becomes quickly obvious that accurate bookkeeping directly affects the bottom line.

**Indeed, few things reek worse than a good moment spoiled by unwanted expenses.**

Obviously, some of this is applicable only to business situations. But the expense reduction aspects can be applied to the family budget. After all, while spending is usually the purpose of gain,

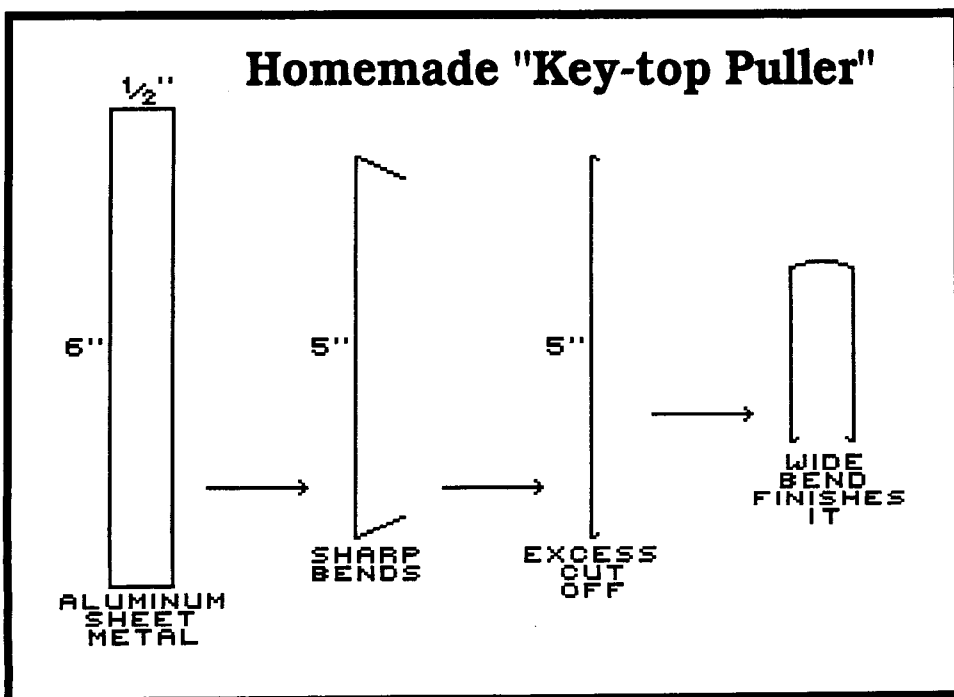
there are costs associated with wanted spending which, if eliminated, would not affect what is enjoyed. Indeed, few things reek worse than a good moment spoiled by unwanted expenses.

A spreadsheet program can be used for the family budget as easily as for business applications. And the results are sometimes impressive. A story to illustrate this concerns Max and Martha, who found it increasingly difficult to make ends meet -- a sad state of affairs for a retired couple.

Though he did not turn it on every day, Max did have a Commodore 64 system with which he wrote an occasional letter and kept track of his extensive stamp collection. And while not a spreadsheet per se, the layout of the stamp program could easily be used to get the job done. So, when Max got sick and tired of his tight budget nagging him, he sat down and put together a detailed list of every expense.

What he discovered is, that with a little planning, they could reduce their monthly expenses by about 12%. Max figured he had hit the motherlode. The sum of the savings amounted to enough to allow an occasional splurge. And when you're living on a fixed income, that is like finding an oasis.

--R.L.M.--





## DO-RE-MI-FA-SO-LA-TI-DO

by

**Rolf L. Miller**

To say that the Commodore 64 can produce music is, in my opinion, an understatement. What skillful programmers have done with the three voices of the Sound Interface Device (SID) chip is amazing to me. And I am not the only one who thinks this. When on occasions PC users happen by while a piece is playing, it is not unusual to witness expressions of surprise upon realizing that the sound is coming from the 64 on the desk.

And this is a stock machine. No extra SID chips have been added for additional voices or stereo. It is not hooked up to a sound system. It uses no special speakers. The sound from machines with those accessories is beyond amazing.

However, all of this is geared to instrumental music. My job involves singing without instrumental accompaniment. And it happens that requests are made for songs which this voice doesn't know.

At home the tune could be plunked out using the music in the song book as a guide. This assumes, of course, the presence of a piano or other instrument, and the skill to play it. I possess neither, though I think I have a program, some place, which simulates a piano. But everything I learned in my youth about music must be in that same place.

What this voice really needs is the ability to sight-sign a song. This can be done by anyone who is practiced in signing the syllabic musical scale, as illustrated in "The Sound of Music" song "Do-Re-Mi" by Rogers and Hammerstein. But as I recall, practice was another misplaced item of my youth.

If the effort were to occur, though, it would need the tones represented by Do Re Mi Fa So La Ti Do. Those tones are easily reproduce beginning at Middle C on a properly tuned piano. Lacking that, it seemed logical to write a little BASIC routine to produce the tones.

Examining both the Users Manual and Reference Guide found sections on Sound and Music. Robbing a few lines of code from examples resulted in the following listing.

```
10 S=54272:FOR X=S TO S+24:POKE X,0:NEXT
20 POKE S+24,15:POKE S+2,225:POKE S+5,9
61 READ N1,N2:IF N1=0 THEN END
70 POKE S+1,N1:POKE S,N2:POKE S+4,65
80 FOR X=1 TO 500:NEXT
90 POKE S+4,64:FOR X=1 TO 50:NEXT:GOTO 61
100 DATA 16,195:REM C DO
110 DATA 18,209:REM D RE
120 DATA 21,31 :REM E MI
130 DATA 22,96 :REM F FA
```

```
140 DATA 25,30 :REM G SOL
150 DATA 28,49 :REM A LA
160 DATA 31,165:REM B TI
170 DATA 33,135:REM C DO
180 DATA 0,0
```

Line 10 clears the sound registers by setting each to zero. Line 20 sets the volume to maximum (15), and sets voice 1 to what the book said would simulate a piano. (Their piano must've been a cheapie.)

Line 61 reads the note DATA which line 70 utilizes, followed by initializing the voice 1 waveform (65) which turns on the sound. The Line 80 loop determines how long the sound continues. Line 90 turns the sound off, then pauses a moment before getting the next note.

The DATA consists of the high, low value for each desired note. The values came from tables supplied by the manuals. The 0,0 DATA flags the end.

## KEY PLAY

A little editing of the DO RE MI FA SO LA TI DO program will allow playing a note by pressing a key. The following uses keys 1 through 8. Pressing the 1 key will play DO, 2 will play RE, and so forth.

```
10 S=54272:FOR X=S TO S+24:POKE X,0:NEXT
20 POKE S+24,15:POKE S+2,225:POKE S+5,9
30 DIM K%(255):K%(49)=1:K%(50)=2:K%(51)=3:K%(52)=4
40 K%(53)=5:K%(54)=6:K%(55)=7:K%(56)=8
61 GET K$:IF K$="" GOTO 61
64 K=K%(ASC(K$))
66 ON K GOSUB 100,110,120,130,140,150,160,170
68 IF K>8 OR K<1 GOTO 61
70 POKE S+1,N1:POKE S,N2:POKE S+4,65
80 WAIT 197,64
90 POKE S+4,64:GOTO 61
100 N1=16:N2=195:RETURN:REM C DO
110 N1=18:N2=209:RETURN:REM D RE
120 N1=21:N2=31:RETURN:REM E MI
130 N1=22:N2=96:RETURN:REM F FA
140 N1=25:N2=30:RETURN:REM G SO
150 N1=28:N2=49:RETURN:REM A LA
160 N1=31:N2=165:RETURN:REM B TI
170 N1=33:N2=135:RETURN:REM C DO
```

Lines 30 & 40 dimensions K% to 255 elements and assigns 1 through 8 to the elements in order as determined by the order of the ASC codes of the keys to pressed. In the case of keys 1 through 8, the ASC codes are in order, 49 through 56. If instead the home row keys A, S, D, F, and J, K, L, : are wanted, substitute the following.

This routine will display three numbers on the screen. The first represents the horizontal position of where the pen is pointing (LPX). The second is the vertical position (LPY). The third tells whether the switch, if present, is pressed (if not present or pressed, it will be 255).

---R.L.M.---

## A Question about geoBEAP

**LOADSTAR** Magazine can be sent over the internet to any subscriber who would prefer to receive it that way. One common method of archiving **LOADSTAR** issues is the .D81 format which stores an entire 1581 disk in a single large file. The recipient must dearchive the file before enjoying the articles within the disk magazine. So I sent a message to the Homestead mail list asking whether Bo Zimmerman's program, called geoBEAP (Bo's Excellent Archival Program), might be able to handle it within the GEOS environment.

Robert Bernardo sent this response....

Dear Dale,

I've used geoBEAP once for the time I had to dissolve a Loadstar.D81 onto a 1581 disk. The program worked well for that use. The following is a description of geoBEAP, taken from Bo Zimmers' website at <http://www.zimmers.net>

geoBEAP 2.0 will create (pack) and dissolve (or unpack) the following disk images:

- .D64 (standard C= emulator 1541 disks)
- .D71 (standard C= emulator 1571 disks)
- .D81 (standard C= emulator 1581 disks),
- ZipCode 4-packs (by DarkStar, the original disk image archiver)
- EMUTIL single compressed images (supports ANY drive type) and gets better compression than .D64 or ZipCode)
- EMUTIL multi-file compressed images (same as above, but multiple files)
- .BEP format (unchanged since 1.5).

geoBEAP 2.0 ALSO supports the following FILE archive formats:

- GEOS Convert (.cvt) files,
- LYNX (.lnx) archives (includes relative file support, and support for EVERY version of LYNX I know of)
- ARK (.ark) archives (including relative file support).

The LYNX support also includes geoPack files, making geoBEAP a direct replacement for that aging application. geoBEAP 2.0 is being released as shareware! geoBEAP 2.0 is available from Bo's website listed above.

*Robert Bernardo*

## Correction for GeoPublish Article

*(from the August issue of the Commodore Digest)*

Dear Dale and Rolf,

I received the Aug, Sept, Oct 2002 UCUGA Digest issues the other day and have had some time to read them through. Very nice job all around on all three issues.

When I read over my GeoPublish article in the August issue, I felt I must have been suffering from a bad case of co-ordinate dyslexia when I wrote paragraph 8 in column 1 on page 6...the last paragraph. I got my X and Y mixed up.

Sincere apologies for anyone who had problems reproducing the Garage Sale poster. If you followed along as I said you should, you would have had problems getting the graphic to turn out right. When I gave instructions to place the graphic, the location would have been better if we were using an image of the Statue of Liberty rather than a boxy garage. The proper instructions should have read:

"Click on the Icon to the left of the 'T' and move your mouse pointer to a point on the page which is 4.5 inches from the top margin and 1 inch from the left margin (1" X, 4.5" Y) and click to place (drop) the Photo Scrap image onto the page."

*Bruce Thomas*

P.S. Can't believe I missed that one.

# LOADSTAR RULES

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# HOW TO BUILD A LIGHT PEN

*compiled from various sources*

Why would you want to build a light pen? If you already have a light pen, you might want to build one just to see how easy it is. If nothing else, the project illustrates the 64's simplicity. And its simplicity is the primary reason the Commodore 64 can still walk on the leading edge of technology.

If, as is the case for many, you have never used a light pen, it might just be what you are looking for as an alternative input device. After all, it is no coincidence that Computer Assisted Design (CAD) programs are generally geared for light pen use. Other graphic environment applications also allow for light pen input, including GEOS which provides a driver for the Inkwell light pen.

When it comes to manipulating the display, light pens are unique. They function differently than other input devices. Unlike using the keyboard, joystick, or mouse to move a pointer on screen, you simply point the light pen where you want activity to occur.

Briefly, the workings of a light pen takes advantage of the way a monitor (or TV) creates the display. The image seen on the screen is actually an array of little phosphorescence dots activated by a beam of light which repeatedly sweeps horizontally across the viewing area from top to bottom at a very fast rate (the raster). Each time this light beam strikes the dots, they brighten momentarily, the effect of the whole producing the image.

The light pen contains a light-sensitive component, commonly a phototransistor, that detects this momentary brightening. The position of the beam of light is monitored by the Video Interface Chip (VIC). When detected by the light pen, a pulse is sent to the computer and the position of the beam stored in memory locations 53267 and 53268, labeled LPX & LPY respectfully. Thus, just where on the screen the light pen is pointing can be determined. (For further technical specifics, consult the Programmer's Reference Guide.)

## The Project

*(Managing Editor's note: The specifics of the project are based on an article which appeared in the January 1987 issue of Commodore Magazine. Feel free to substitute components where the product numbers listed are found to be dated.)*

### The needed components are:

Q1 - a phototransistor (a Motorola MRD300 is specified which has a switching time of 2 microseconds; a Texas Instruments TIL414, Radio Shack #276-145, is listed as an alternative, though it is slower at 10 microseconds which will give less accurate response).

R1 - a 100K Ohm 1/4 Watt resistor.

S1 - a subminiature SPST switch, RadioShack #275-1571, (though almost any SPST normally open momentary switch will do).

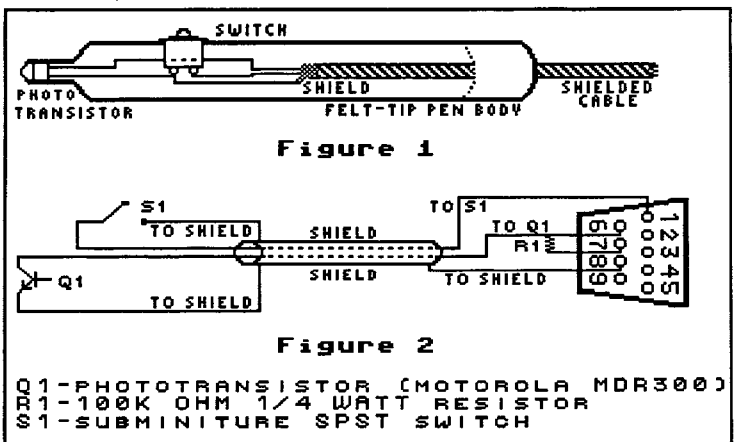
A 9-pin D connector and hood assembly (which will be plugged into joystick port 1).

Shielded 2-wire cable (1-wire cable can be used if the switch is eliminated -- see later).

A case to house the light pen (a gutted 3/4" felt-tip pen is suggested -- see Figure 1 -- though a smaller diameter could be used by eliminating the switch -- see later).

Using the 9-pin D connector, S1 is attached between pin 1 and pin 8. R1 is attached between pin 6 and pin 7. The emitter of Q1 is attached to pin 8, and the collector of Q1 is attached to pin 6. (The base of Q1 is the photo-sensor.) (See Figure 2.)

As previously mentioned, GEOS provides a driver for the Inkwell light pen (which came with the Flexidraw package). It is noted that the nose-switch of the Inkwell light pen is connected to pin 3. So, in order to use the project pen with GEOS, connect the switch to pin 3 rather than pin 1.



Alternatively, most other light-pen oriented programs do not require a light pen with a switch. Instead, the press of a key, often CTRL, is used as the trigger. Actually, this method tends to produce better results. The reason has to do with eliminating unwanted pen movement, which pressing a switch on the pen body invariably causes. So, the switch can be eliminated entirely if the program the pen will be used with allows pressing a key to activate the trigger.

This little test program can be used to verify if the device (plugged into joystick port 1) is working.

```
10 POKE 53280,1:POKE 53281,1
20 X=PEEK(53267)
30 Y=PEEK(53268)
40 Z=PEEK(56321)
50 PRINT CHR$(147);X,Y,Z
60 FOR I=1 TO 50:NEXT
70 GOTO 10
```



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CIVIC is associated with UCUGA and members receive the Commodore Digest monthly from UCUGA.

CIVIC maintains a large collection of programs in its disk library. Members may obtain library disks in exchange for blank disks at meetings or by mail for \$1 per disk.

At the September 14th instructional meeting, Ben Holmes continued reviewing the contents of the CMD hard drive previously used by the now off-line BBS. Rolf Miller asked for copies of a couple of text files, which allowed Ben to demonstrate the use of the F-COPY program.

At the October 5th general meeting, Rolf presented some old CIVIC 64/128 patches he found. John Doane noted, to the surprise of newer members, that "CIVIC" stands for Channel Islands VIC. The original group formed in support of the VIC-20. The balance of the meeting determined the use of a home inventory program and Ray Zink presented the last of his "egabrag" (garbage) disks which contained a couple of utilities along with various games.

**LUCKI**

The LUCKY Club or L.U.C.K.I. (the Lucky Users of the Commodore Klassic International) is a Non-Profit Organization whose pupose is to educate and encourage users of Commodore computers and related equipment. MEMBERSHIP is \$20.00 a year (\$25 overseas) which includes the LUCKY Library, the monthly newsletter, and special offers.

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NEWSLETTER PRODUCTION - Maurice Randall

Club membership dues are \$20 annually for members in the U.S. and Canada. Overseas membership is \$30. Send check or money order to:

**LACC, Attn: New Member**

**P.O. Box 1065, East Lansing MI 48826**

**SWRAP**

The South West Regional Association of Programmers Commodore 64 User Group, Inc. (non-profit), or SWRAP.

SWRAP has been a Commodore 64 and 128 user group in Chicago, Illinois since January 1983. Our current meeting location is on Chicago's southeast side, at the East Side Bible Church, 10524 S. Avenue N, Chicago IL 60617

Normally, our meetings are held on the second Sunday of each month, from 2:30 - 4:30 PM. All visitors are encouraged to come.

**The SWRAP Officers for 2002 are:**

President - Randy Harris 773-375-9017 [rharris1@videocam.net.au](mailto:rharris1@videocam.net.au)

Treasurer - Dave Ross

Secretary - Robert Schwuchow (pronounced like SHOO' ko)

Dues are \$25.00 per calendar year.

The SWRAP Home Page URL on the internet is:

**<http://swrap.net>**

Here you will find detailed directions to the meeting place, a calendar of events, and the latest news. SWRAP strives to help its members, and Commodore users as a whole, get the most out of their 64's.

**Madison Area Commodore Users Group**

P. O. Box 1305

Madison WI 53701-1305

30 DIM K%(255):K%(65)=1:K%(83)=2:K%(68)=3:K%(70)=4  
40 K%(74)=5:K%(75)=6:K%(76)=7:K%(58)=8

Line 61 gets a key press and line 64 assigns the value in the K% element as determined by the ASC code of the key press in K\$. That value, 1 through 8, directs which of the following eight line numbers to GOSUB, where the note values are assigned. If the value is not 1 through 8 (i.e. 0), line 68 sends program execution back to line 61.

Upon RETURN from the GOSUB line, line 70 plays the note, and line 80 waits until no key is pressed, whereupon line 90 kills the note and program execution goes back to line 61.

—R.L.M.—

## THE IDE64 INTERFACE

### A Hard Drive Alternative For The 64

*compiled from various sources*

The IDE64 Interface is a cartridge device for connecting an IDE hard disk drive (HDD) and/or CD-ROM drive to a Commodore 64. The IDE64 is designed for the Commodore 64 and 128 in 64 mode. It plugs into the Expansion (cartridge) Port and contains a 40-pin connector to which the hard drive can be attached via a standard IDE cable.

This can be viewed as a stand-alone setup because a PC is not involved. The IDE64 Interface cartridge contains all the hardware and software necessary to enable the IDE drive through the 64. So, all that is needed to provide the 64 with a large capacity disk drive that will load programs about 90 times faster than a 1541 is the IDE64 Interface, an IDE hard drive, a (PC) power supply for it, and IDE cable -- no other special connections are required.

Nor is any special equipment needed to update the IDE64 Interface. The IDE Disk Operating System (DOS) is contained in a 64KB PEROM (flash EPROM), along with a Machine Code Monitor, File Manager and Setup, which allows the 64 to perform any updating which becomes necessary.

Any IDE hard disk up to 8GB can be used with the IDE64. If a larger drive is connected, only the first 8GB of the drive's capacity can be utilized, though two drives can be connected to this controller. Also, the IDE64 fully supports ATAPI CD-ROM drives. The ISO9660 filesystem with Joilet extension is supported.

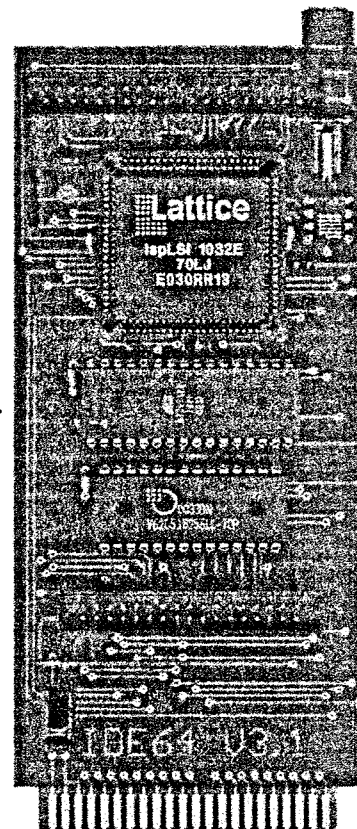
The DOS created for the IDE64 interface is similar to the DOS used in the 1541, except that subdirectories can be created without number or capacity restrictions (the only limit is the capacity of the hard drive). The 64's BASIC is extended to accommodate this and other hard drive commands. Therefore, programs can be loaded from the IDE hard drive in the standard way just as would otherwise be accessed from floppy or tape. And where programs interact with the drive, it is not difficult to patch them to work with the hard drive. (Many patches are readily available.)

Unfortunately, however, an IDE64 driver for GEOS/Wheels is not available. But JOS contains full IDE64 support, and (at this writing) a driver for Linux is in development.

Nor does the IDE64 Interface contain a pass-through expansion slot. This is because of potential addressing conflicts. Instead, a Short-BUS is provided for connecting external devices like a DUART Card (a dual port RS-232 interface). Thus, it is not possible to use Action Replay, Final, or game cartridges together with IDE64.

But, there is a version of the IDE DOS especially designed for SuperCPU. All that is necessary to make the IDE64 work with a SuperCPU is to obtain the "SCPU firmware" binary file (readily available) and reprogram the PEROM (flash EPROM). And as before noted, this requires nothing more than the 64 utilizing the resident IDE64 ROM programming tool.

(Visit <http://come.to/ide64> on the internet for further information.)



Top view of the IDE64 Cartridge



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## Muskegon Area Commodore User Group

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Muskegon Heights MI 49444

## Cincinnati Commodore Computer Club

c/o Roger Hoyer  
31 Potowatomie Trail  
Milford, OH 45158

## WCCUG---News 'n Views from the Western Colorado Commodore User Group

P. O. Box 81, Mack CO 81525

### WCCUG Officers:

Jake Smith....President and Secretary/Treasurer  
Earl Williams...Vice President Phone: (970) 245-2961

## RVUG---Rancocas Valley Users Group

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Treasurer	Bill Mays	mayswl@home.com
Secretary	Melvin Hamilton	melhamil@kwiknet.net

### Appointments...

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Public Relations	Joe Medio
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RVUG Liaison	Walt Deitz

*The Users Port* is published 10 times per year by the Rancocas Valley Users Group. Send all correspondence to:

RVUG c/o Melvin Hamilton  
5 Thornleigh Place, Willingboro NJ 08046-3814

RVUG Meeting Dates are the first Thursday of the month, September through June unless otherwise noted. We meet in the Cinnaminson Library at 7:00 pm in the basement meeting room. The library is located next to Riverton Road near US Route 130. Dues are \$10/yr. The *USER PORT* is our newsletter and is an educational tool for C64/128 owners.

## Diablo Valley C.U.G.

c/o Lawrence E. Englund  
1821 Sunnyvale Ave  
Walnut Creek CA 94596

**H.C.U.G.** c/o Thomas W. Cline  
35-1400 Limeridge Rd. E.  
Hamilton, Ontario  
CANADA L8W 1L7

## TPUG (Toronto Pet Users Group)

c/o John Easton  
258 Lake Promenade  
Etobicoke, Ontario  
CANADA M8W 1B3

## WCCUG---News 'n Views from the Western Colorado Commodore User Group

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### Solution to the November Puzzle found on page 3.

```

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## **Commodore Digest**

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## **UCUGA**

United Commodore User Groups Association

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**Rolf L. Miller,  
492 Anacapa St,  
Ventura CA 93001**

And, of course, include your mailing address and an e-mail address, if available.

In addition to brief reports of local activities and information provided by Member Groups, the intent is to present material in every issue of the Digest which addresses the interest base of all its readers. The goal is to inform the broadest possible range of users in order to enhance all aspects of Commodore use.

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